

## P. ENT COOPERATION TREATY

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## NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents  
United States Patent and Trademark  
Office  
Box PCT  
Washington, D.C.20231  
ÉTATS-UNIS D'AMÉRIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 04 November 1999 (04.11.99)	
International application No. PCT/AU99/00201	Applicant's or agent's file reference
International filing date (day/month/year) 24 March 1999 (24.03.99)	Priority date (day/month/year) 24 March 1998 (24.03.98)
Applicant GILLESPIE, David et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:

21 October 1999 (21.10.99)

☐ in a notice effecting later election filed with the International Bureau on:2. The election ☒ was☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO  
34, chemin des Colombettes  
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

Lazar Joseph Panakal

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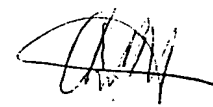
18

**TENT COOPERATION TREATY**  
**PCT**  
**INTERNATIONAL PRELIMINARY EXAMINATION REPORT**  
(PCT Article 36 and Rule 70)

REC'D 02 NOV 1999  
PCT

Applicant's or agent's file reference BV/Rkane	<b>FOR FURTHER ACTION</b>	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416).
International application No. <b>PCT/AU 99/00201</b>	International filing date ( <i>day/month/year</i> ) 24 March 1999	Priority Date ( <i>day/month/year</i> ) 24 March 1998
International Patent Classification (IPC) or national classification and IPC  <b>Int. Cl.<sup>6</sup> G06F 9/44, 15/173, 17/30</b>		
Applicant 80-20 Software Pty Limited (et al.)		

1.	This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2.	This REPORT consists of a total of 3 sheets, including this cover sheet.  <input type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).  These annexes consist of a total of      sheet(s).
3.	This report contains indications relating to the following items:  I <input checked="" type="checkbox"/> Basis of the report II <input type="checkbox"/> Priority III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability IV <input type="checkbox"/> Lack of unity of invention V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement VI <input type="checkbox"/> Certain documents cited VII <input type="checkbox"/> Certain defects in the international application VIII <input type="checkbox"/> Certain observations on the international application

Date of submission of the demand 21 October 1999	Date of completion of the report 27 October 1999
Name and mailing address of the IPEA/AU AUSTRALIAN PATENT OFFICE PO BOX 200 WODEN ACT 2606 AUSTRALIA Facsimile No. (02) 6285 3929	Authorized Officer   <b>RAYMOND CHAO</b> Telephone No. (02) 6283 2191

**I. Basis of the report****1. With regard to the elements of the international application:\***

- ☒ the international application as originally filed.
- ☐ the description,        pages , as originally filed,  
   pages , filed with the demand,  
   pages , filed with the letter of .
- ☐ the claims,        pages , as originally filed,  
   pages , as amended (together with any statement) under Article 19,  
   pages , filed with the demand,  
   pages , filed with the letter of .
- ☐ the drawings,        pages , as originally filed,  
   pages , filed with the demand,  
   pages , filed with the letter of .
- ☐ the sequence listing part of the description:  
   pages , as originally filed  
   pages , filed with the demand  
   pages , filed with the letter of .

**2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.**

These elements were available or furnished to this Authority in the following language which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

**3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, was on the basis of the sequence listing:**

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

**4. ☐ The amendments have resulted in the cancellation of:**

- ☐ the description,        pages
- ☐ the claims,        Nos.
- ☐ the drawings,        sheets/fig.

**5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\***

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. Statement**

Novelty (N)	Claims 1-34	YES
	Claims	NO
Inventive step (IS)	Claims 1-34	YES
	Claims	NO
Industrial applicability (IA)	Claims 1-34	YES
	Claims	NO

**2. Citations and explanations (Rule 70.7)**

None of the citations cited in the International Search Report either individually or as an obvious combination discloses all the features of the claims. Therefore, claims 1-34 are considered to be novel and inventive.

## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference VM/rk	<b>FOR FURTHER ACTION</b> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. <b>PCT/AU 99/00201</b>	International filing date (day/month/year) 24 March 1999	(Earliest) Priority Date (day/month/year) 24 March 1998
Applicant (1) 80-20 SOFTWARE PTY LIMITED (2) GILLESPIE, David et al		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 4 sheets.



It is also accompanied by a copy of each prior art document cited in this report.

## 1. Basis of the report

- a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.



the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing:



contained in the international application in written form.



filed together with the international application in computer readable form.



furnished subsequently to this Authority in written form.



furnished subsequently to this Authority in computer readable form.



the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.



the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ Certain claims were found unsearchable (See Box I).

3. ☐ Unity of invention is lacking (See Box II).

4. With regard to the title, ☒ the text is approved as submitted by the applicant.



the text has been established by this Authority to read as follows:

5. With regard to the abstract, ☒ the text is approved as submitted by the applicant



the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No.



as suggested by the applicant.



because the applicant failed to suggest a figure



because this figure better characterizes the invention



None of the figures

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/AU 99/00201

<b>A. CLASSIFICATION OF SUBJECT MATTER</b>		
Int Cl <sup>6</sup> : G06F 9/44 15/173 17/30		
According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b>		
Minimum documentation searched (classification system followed by classification symbols) IPC : G06F 9/44 15/173 17/30		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched AU : IPC as above		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) DERWENT & JAPIO : (Document# AND Management#) OR DME) AND (Extension# OR Exchange# OR Microsoft)		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,A	US 5893908 A (CULLEN et al) 13 April 1999 see abstract, figure 3 and associated text	
P,A	US 5887171 A (TADA et al) 23 March 1999 see abstract, figure 12 and associated text	
P,A	US 5805889 A (VAN DE VANTER) 8 September 1998 see abstract, figure 4 and associated text	
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C <input checked="" type="checkbox"/> See patent family annex		
* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family		
Date of the actual completion of the international search 11 June 1999		Date of mailing of the international search report 22 JUN 1999
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200 WODEN ACT 2606 AUSTRALIA Facsimile No.: (02) 6285 3929		Authorized officer R. CHAO Telephone No.: (02) 6283 2191

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU 99/00201

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5544051 A (SENN et al) 6 August 1996 see abstract	
A	JP 04-236656 (FUJI XEROX CO LTD) 25 August 1992 see English abstract	

**INTERNATIONAL SEARCH REPORT****Information on patent family members****International application No.  
PCT/AU 99/00201**

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report				Patent Family Member	
US	5893908	DE	19751570	JP	10154229
US	5887171	EP	786723	JP	9204348
US	5805889	EP	769739	JP	9269909
END OF ANNEX					



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WORLD INTELLECTUAL PROPERTY ORGANIZATION  
International Bureau



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification <sup>6</sup> :</b> <b>G06F 9/44, 15/173, 17/30</b>	<b>A1</b>	<b>(11) International Publication Number:</b> <b>WO 99/49388</b> <b>(43) International Publication Date:</b> 30 September 1999 (30.09.99)
<b>(21) International Application Number:</b> PCT/AU99/00201 <b>(22) International Filing Date:</b> 24 March 1999 (24.03.99) <b>(30) Priority Data:</b> PP 2522 24 March 1998 (24.03.98) AU <b>(71) Applicant (for all designated States except US):</b> 80-20 SOFTWARE PTY. LIMITED [AU/AU]; 647 Chapel Street, South Yarra, VIC 3141 (AU). <b>(72) Inventors; and</b> <b>(75) Inventors/Applicants (for US only):</b> GILLESPIE, David [AU/AU]; 647 Chapel Street, South Yarra, VIC 3141 (AU). STRANGES, Frank [AU/AU]; 647 Chapel Street, South Yarra, VIC 3141 (AU). <b>(74) Agent:</b> TATLOCK, Alfred; A. Tatlock & Associates, 208 Elgin Street, Carlton, VIC 3053 (AU).		<b>(81) Designated States:</b> AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).  <b>Published</b> <i>With international search report.</i>
<b>(54) Title:</b> DOCUMENT MANAGEMENT EXTENSION SOFTWARE  <b>(57) Abstract</b>  There is provided a document management extension system for Microsoft Exchange wherein the system merges the functionality of index databases, file repositories and messaging systems using Exchange and leverages the tight integration of Exchange and an NT Server for security and redundancy management which includes a user interface and this is accessed through dialogs in specific applications or through a find application.		

**FOR THE PURPOSES OF INFORMATION ONLY**

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

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CZ	Czech Republic	LC	Saint Lucia	RU	Russian Federation		
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EE	Estonia	LR	Liberia	SG	Singapore		

**DOCUMENT MANAGEMENT EXTENSION SOFTWARE**

This invention relates to a computer software program for an improved document management system.

The basic function of document management software is to manage a document's lifetime from creation to destruction and at least give someone an even chance of locating the document by being able to search on more than an eight-dot-three pseudonym for the document.

Enterprise document management software on the other hand was designed to solve the problems of large organisations with thousands of networked computers. The software was designed to securely and dependably manage every electronic document produced with the enterprise and reliably retrieve those documents wherever and whenever required.

Enterprise document management software typically has the following components, which are a database, a browser interface, a search interface and a method of intercepting file save and open calls.

The database is used to store information about a document other than its file name. Information such as the author, the typist, the date of creation and notes are typical fields, however, most importantly, are the database controls where the file is stored and the access to that location. The database record contains a pointer to the file system saying find this file. It also generally contains information as to which application should be launched to edit the document such as Microsoft, Word or Excel.

The database is, in effect, a Connection Manager.

Many enterprise document management systems provide an interface whereby the user can browse in some logical fashion through the documents available to them.

All enterprise document management systems provide some form of search ability with respect to the fields recorded in the database. The responsiveness of the search is entirely dependent on the database chosen for the back-end.

Some of these systems also offer full text searching of the contents of the electronic documents themselves.

Many of the enterprise document management systems are able to enforce proper profiling and storage documents by intercepting calls made by the document production software to the file system. There are two ways in which this can be achieved. One is to use macros to alter behaviour of the production application or interfere with the low level operating system code used by the network to properly manage the file system. The macro method usually involves the launch of a part of the document management system in response to a file save or open command. Most systems require that their software be therefore continuously running in the background in order to respond to these calls, however this can have dramatic effects on the operators system performance. As there is only so much RAM to share between applications, the more that can be made available for production applications the better.

The problem with many of the enterprise document management systems which are aimed essentially at the large corporate market is that apart from being expensive software, it does not cater for small to medium size organisations.

Since the first enterprise development systems became available, Network Operating Systems(NOS) have been quietly maturing in the background. Modern NOS's such as Microsoft's NT4 Server have been built in object (document) level security, replication and file systems databases such as Exchange eliminating the need to rebuild these things as expensive add-ins.

NOS's have matured to the point where much of what a document management system does is already built into the NOS or tightly integrated components like Exchange and Office.

It is the object of this invention to provide a document management system which is able to be utilised by everyone.

The invention, in its broadest sense, is a document management extension system for Microsoft Exchange wherein the system merges the functionality of index databases, file repositories and messaging systems using Exchange and leverages the tight integration of Exchange and an NT Server for security and redundancy management.

In this specification, any reference to a particular software version is an indication that the system of the invention

operates with at least that particular version. As software is upgraded, so the system will, where necessary, be upgraded to operate with the later software version.

In order that the invention may be more readily understood, we shall describe, a preferred embodiment of the invention. The flow chart shown on page 5a provides an indication of the operation of Document Management Extension of the present invention and is of value when considering the description of the invention.

Document Management Extensions for Microsoft Exchange (**DME**) is a document management system for everyone. **DME** merges the traditional functionality of index databases, file repositories and messaging systems by using Exchange 5.0 and leverages the tight integration of Exchange 5.0 and an NT Server 4.0 for security and redundancy management.

**DME** is tightly integrated with host applications. There is no standalone application, rather numerous interfaces to the Document Management Extensions. The only user interface to **DME** is via dialogs in ones applications or via the Find application.

The specification in detail describes each of these interfaces and provides technical descriptions of the interfaces.

## **DOCUMENT PRODUCTION APPLICATION INTEGRATION**

### **File Open and File Save/Save As**

Applications supported by DME in Release 1.0 were Word 97, PowerPoint 97, Binder 97, Excel 97 and Outlook 97. Eastman (WANG) Image Viewer and Windows Paintbrush are also supported. At some future time, non-Office applications may be directly supported. Three Office 97 applications support the Open Document Management API. DME leverage this support. Non-ODMA compliant applications such as Outlook 97 and Excel 97 use macro interfaces to arrive at the same result. From the user's point of view all applications behave in exactly the same fashion.

### **Word 97, Binder 97 and PowerPoint 97**

The Open Document Management API (ODMA) is the acknowledged standard API for access to Document Management Systems. Word 97, Binder 97 and PowerPoint 97 are ODMA compliant applications. Word 97, Binder 97 and PowerPoint 97 register themselves with DME



using an ODMRegisterApp call to the ODMA Connection Manager (ODMA32.DLL). ODMA returns a handle for the application to use for identification in all subsequent calls. When the application exits, it calls ODMUnRegisterApp to return the handle. As part of this registration process, ODMA searches the Registry for entries in HKEY\_Local\_Machine/Software/Classes/ODMA32. It tries to connect to the first Document Management System (DMS) key with a sub-key named DEFAULT. The value of the DMS key is the path to the **DME** DLL that provides the functionality specified by ODMA. All screens for selecting and setting properties of documents come from **Document Management Extensions for Microsoft Exchange**. The **DME** search application (discussed separately below) interacts independently with the **DME** DLL rather than via an application.

#### **Excel 97 and Outlook 97**

Neither Excel 97 nor Outlook 97 are ODMA compliant applications. For these applications macrocode replaces the ODMA32.DLL calls in the ODMA model. The macros are not editable by the user. To the user there is no difference in application behavior as between an ODMA and a non-ODMA application.

## **Internet Browser Integration**

The interaction between Exchange Server and Internet/Intranet users is provided by Microsoft Internet Information Server (IIS) 3.0 Active Server Pages in conjunction with Exchange Server 5.0 Active Server Components. Outlook or Exchange user sessions establish direct MAPI connections with Exchange Server, whereas DME and browsers use Active Messaging objects to access the Exchange public folders.

## **DME DOCUMENT MANAGEMENT FEATURES**

### **Versioning**

Many users need to keep track of who did what to a document when. With versioning users can go back in time and see who made what changes to a document on various dates.

Versioning in all supported applications is accomplished by adding historical copies of documents to the MAPI record for the document.

Versions of a document can be seen within the document properties and can be accessed directly from Document Find.

### **Check In/Out to Local Machine**

Before examining Check In and Check Out it is worth looking at how **DME** transacts with the Exchange Server in a normal File Open. The Checkout procedure is merely an extension of that functionality. Both procedures are designed to ensure maximum redundancy in operation.

### **How Does it Work?**

When a user opens a document using Document Management Extensions for Microsoft Exchange, the following process occurs:

- The **DME Service** sets a flag in the **DME** object Store by setting the Status property to OPEN and by inserting the time and user's name in the StatusInfo property.
- The **DME Service** copies the object from the public **DME** store to the user's mailbox.
- The document is copied from there to a local TEMP directory for editing by the **DME** user.

When a document is closed or saved the following process occurs:

- The document is moved from the local TEMP file to the TEMP folder in the OST File (if the server is offline) or the TEMP folder in the user's mailbox (if the server is online).
- All documents are moved from the user's mailbox to the DME store.
- For each document, the Status property is reset to AVAILABLE and the StatusInfo property is set to null.

In fact online/offline detection automatically switches users between integration with the document manager and working offline. If the network or server should fail while a document is open, the user can continue to work without even being aware of the outage. As soon as the network is available the user's Offline file will automatically resynchronise with the User's Mailbox on the server. Users are able to Check documents out to their local machine using a right click command in any dialog (see context menus below). DME allows you to save these documents to the file system so that you can access them when not connected to the server or send them to a user without access to the document manager.

Those documents are still visible within the rest of **DME** however the 'check out' option is no longer available on the right click menu. If another user attempts to open the document they receive a message informing them who has the document checked out and when it was checked out (similar to the message received when a document is in use).

If the user selects 'check out' from the right click menus available from with **DME** dialogs, the following process occurs:

- **DME** sets a flag in the object Store by setting the Status property to **CHECKED\_OUT** and by inserting the time and user's name in **StatusInfo** property.
- **DME** copies the object from the public **DME** store to the user's location on the physical file system.

When a user wishes to check a document in, they must be connected to the network. The Check-ed out copy of the document is moved to the **DME** object store and the flag is reset in the **DME** object store. If the object does not exist in the **DME** store (ie it was created offline), then it is added to the store.

## **Windows 95 (NT Workstation) Desktop Integration (Shell Extensions)**

**DME** modifies the following parts of the Windows 95 (Windows NT) shell:

- **DME** folders are added to the Windows Explorer and Outlook 97.
- The Start Menu is modified.
- An application is added to the system tray.
- An item is added to the context (right click) menu for some document types.

## **Windows 95 Explorer (namespace extensions)**

A **DME** name space extension is added to the shell. This appears as a child of 'My Computer' in Explorer. **DME** contains a folder named 'My Documents' which contains the results of a stored query of **DME** that returns all (within a preset limit) documents for which the user is the creator.

The user may create other sub-folders of the **DME** object by saving searches of the document set. When the user saves searches in

Document Management Extensions for Microsoft Exchange, those searches appear as sub-folders of the **DME** object.

#### **Outlook 97 (name space extensions)**

#### **Browsing documents**

**DME** is logically an extension of the file system (rather than the messaging system) and should therefore appear as such in Outlook 97. The folder '**Document Manager**' is a shortcut to the name space extension found in Windows Explorer which gives you access to one's saved searches and works in a similar manner as the 'My Documents' shortcut which points to the system folder 'My Documents' on the local drive of the host. The **DME** document store will not appear as part of the Exchange Folder Tree either as a public folder or as a private folder.

#### **System Tray**

A quick find icon has been added to the Start Bar Status Area (sometimes called the system tray) located on the lower right of screen when the Start Bar is in default horizontal orientation. The icon permits a quick retrieval from **DME** on the basis of

document number or provides faster access to the DME Find Documents application.

### **Start Menu**

The Start Menu has been modified in several ways:

- A command called 'In the Document Manager' has been added to the Find menu using a shell extension.
- The 'Open from Document Manager' command has been added to the start bar which launches a DME open dialog rather than the standard OSA.exe dialog.
- The list of recent edits will be accessible under the 'Documents' menu. This will be done using a doclink shell extension.

### **Document Find**

The "In the Document Manager..." option on the start menu under Find launches an application for searching the DME store that is almost identical in appearance to the normal Windows 95/NT4 Find program.



The application permits searching on all **DME** properties and permits viewing of object properties and setting of permissions. Context menus also deliver check out functionality from the search dialog. From this dialog, the user is able to save searches and retrieve those searches using a folder tree drop. Full text searching is also available from this dialog (see full text searching below). "Send to" and "Send link" functionality in the Find Application enables the user to send documents and searches to others in both an organisation and outside the organisation.

#### **Context Menu**

Context menu handlers (a form of shell extension) have been used to add menu items to the context menu for all potential **DME** file objects when they are displayed outside a **DME** component. The context menu is displayed when a user clicks a file object with the alternate (usually the right) mouse button. If the object is capable of import to **DME** an item is added to the 'Send to' menu, being 'send to Document Manager'.

Within **DME** dialogs a context menu that presents the following options appears:

**Open:** which is the default (double click) option and which launches the appropriate application and opens the file.

**Check Out:** which is disabled if the document is already checked out.

**Check In:** which is disabled if the document is already checked in.

**Properties:** which displays the properties screen and which permits the viewing and editing of document properties or attributes. Date created field and date modified fields are also part of this dialog. Further to this, a history of document change events can be captured for each document or for all documents in a store. Users can see a full history of transactions on their documents directly from any property dialog. They can also turn the history on or off without affecting the server side audit trail.

**Status:** the status field permits the implementation of simple workflow and contains choices such as draft and published - Administration configurable.

### **Back End Functionality**

#### **Exchange Object Store**

DME uses the Fulcrum Knowledge Network Server to index and search the message store. The administrator can configure the Index to cover one or more Server folders within the Object store.

A user is able to see whichever indices he/she has permission to search. A user (other than the administrator) cannot see the structure of the store and is not aware of that structure.

Each server has a unique identifier which coupled with a document number (eg. Server1-2345) provides a unique identifier for the Exchange organisation.

**Document Management Extensions for Microsoft Exchange's Object Store** and structured index is contained in full within an Exchange 5.0 public information store.

### **Security**

To function as a document management system, **DME** must prevent uncontrolled and unauthorized access to its object store. The only method of access to the **DME** store is programmatically (ie via **Document Management Extensions for Microsoft Exchange**). **DME** implements access security using the Exchange address book. The type of security applicable to a document is similar to that of an exchange folder. Since no user except the administrator can access the store without using **DME** the Exchange Server automatically implements all external (to **Document Management Extensions for Microsoft Exchange**) security.

#### **Read/Write Permission and Search Permission**

Read/Write access allows the user to change the document and properties but restricts them from changing permissions or deleting them. The permission setting is useful in team collaboration environments where the team leader is able to set the permissions on the document and everyone else can work on it but may not change the permissions or delete them.

Search access allows a user to discover the item through searching and view the properties but not open the site. This permission setting allows others in the organisation to know of the existence of a document, however, it does not enable a person to read the document without first contacting the author. An example of this is where an Organisation would wish to have people know that it had done research on Intranets without having them necessarily having the right to read the research.

#### **Time-Based Archive Delete**

All items can be flagged for archive or delete after a specified period of time based on the document type allocated to that item. Organisations can therefore enforce a time-based delete or archive policy by setting a time limit based on the document type which can be overridden if necessary.

User's on the other hand may set any document level security attribute except delete using a DME interface to the Exchange security settings.

**Replication**

Replication is supported only on a whole of document set basis in release 5.0. In Release 5.5 in the future, administrators will be permitted to specify a document type as capable of individual replication. This means that documents of the type replicable will be copied to a public folder that is included in the Exchange replication system.

**Full Text Searching**

Full text searching is available on all **DME** documents. The user accesses the functionality either from an **DME** 'Open' dialog within a supported application ('Find in Text' field) or via the 'Find Document' item on the Windows 95 (NT Workstation) 'Start' menu and other up-dates of Windows. The user may also perform an Internet Explorer based full text (or attribute) search.

**DME** use the Fulcrum Knowledge Network and Fulcrum Exchange Connector to provide this functionality.

## Administrator Options

There are very few administrator options supported by DME in keeping with the policy of *'its already there don't rebuild it'*. User access is administered via the exchange address books. Secure access to documents is administered at the user level. The only administrator override being that the administrator has open access on all documents.

In addition to all Microsoft Exchange administration options, the Exchange administrator is able to:

- Create and delete Document Types.
- Set archive properties (and eventually replication properties) in relation to those Document Types.
- Search across the whole document management extension organisation - (Global Administrator Search) regardless of document permission, but is unable to open or view documents without explicit permission.

## **USER INTERFACE**

### **Document Production Application Integration**

#### **File Open and File Save/Save As**

All applications supported by DME use identical File Open and File Save/Save As dialogs.

#### **DME File Open Screen**

DME intercept all file interactions in supported applications and replace the standard dialogs with DME dialogs. The DME dialogs are almost identical in appearance and behavior to their Office 97 and updates counterparts. An interesting feature of the Save dialog is that in remaining consistent with the Microsoft look and feel a form of Auto-Profiling has been implemented. When a user single left clicks on an existing document, DME fill in all profile fields for that document. All a user need do is identify a document which is like the one being saved, click on it and change the name (or any other attribute) to complete the profiling of that document. They need not change anything, but then a new document will be created with exactly the same



attributes (which could lead to confusion when the user wishes to retrieve the document). In a document management system, the only unique attribute is the document number.

### **Internet Browser Integration**

DME supports a Browser interface that permits remote searching and browsing of documents using the Microsoft Office (Word, Excel and PowerPoint 97) viewers. Though editing was not available in release 5.0 it has become available in subsequent document management extension programs.

### **Versioning**

DME versioning is identical in look and feel to the existing Word 97 and updates versioning.

Similar versioning dialogs have been added to Office Applications that do not directly implement versioning. The DME versioning dialogs implement versioning within DME. This form of versioning is one set of properties to many versions of the document.

## **Linking**

This feature allows users to link documents to each other. User's can specify one or two way logical links between related documents and link information can be viewed from any search result in the DME Find Client.

## **Windows 95 (NT Workstation) Desktop Integration**

DME modifies the following parts of the Windows 95 (Windows NT) desktop:

- DME folders are added to the Explorer 95 and Outlook 97.
- The Start Menu is modified.
- An application is added to the system tray.
- An item is added to the context (right click) menu for some document types.

## **Windows 95 Explorer**

"Document Manager" appears as a child of 'My Computer' in Explorer . "Document Manager" contains a folder named 'My Documents' which contains the results of a stored query of DME

that returns all (within a preset limit) documents for which the user is the creator.

The user may create other sub-folders of the "Document Manager" folder by saving searches of the document set. When the user saves searches in Document Management Extensions for Microsoft Exchange, those searches appear as sub-folders of the "Document Manager" folder.

## **Outlook 97**

### **Browsing documents**

DME is logically an extension of the file system (rather than the messaging system) and should therefore appear as such in Outlook 97. The folder '**Document Manager**' is a shortcut to the namespace extension found in Windows Explorer which gives you access to your saved searches and works in a similar manner as the 'My Documents' shortcut which points to the system folder 'My Documents' on the local drive of the host. The DME document store will not appear as part of the Exchange Folder Tree either as a public folder or as a private folder.

## **Journal**

Documents accessed via **DME** will update the Outlook 97 journal. This effectively provides a history functionality of the document management system at a user view level.

## **System Tray**

A quick find icon has been added to the Start Bar Status Area (sometimes called the system tray) located on the lower right of screen when the Start Bar is in default horizontal orientation. The icon permits a quick retrieval from **DME** on the basis of document number or provides faster access to the **DME Find Documents** application.

## **Start Menu**

The Start Menu has been modified in several ways:

- A command called 'In the Document Manager' has been added to the Find menu using a shell extension.
- The 'Open from Document Manager' command has been added to the start bar which launches a **DME** open dialog rather than the standard **OSA.exe** dialog.

- The list of recent edits will be accessible under the 'Documents' menu. This will be done using a doclink shell extension.

### **Document Find**

The "In the Document Manager" found under the Find option on the start menu launches an application for searching the DME store that is almost identical in appearance to the normal Windows 95/NT4 Find program.

The application permits searching on all DME properties and permits viewing of object properties and setting of permissions. Context menus also deliver check out functionality from the search dialog. From this dialog, the user is able to save searches and retrieve those searches using a folder tree drop down. Full text searching is also available from this dialog.

### **Context Menu**

Menu items have been added to the context menu for all potential DME files when they are displayed outside a DME dialog. The context menu is displayed when a user clicks a file object with

the alternate (usually the right) mouse button. If the object is capable of import to **DME** an item is added to the 'Send to' menu, being 'send to Document Manager'.

Within **DME** dialogs a context menu that presents the following options appears:

**Open:** which is the default (double click) option and which launches the appropriate application and opens the file.

**Check Out:** which is disabled if the document is already checked out.

**Check In:** which is disabled if the document is already checked in.

**Properties:** which displays the properties screen and which permits the viewing and editing of document properties or attributes. Date created field and date modified fields are also part of this dialog. Further to this, a history of document change events can be captured for each document or for all documents in a store. Users can see a full history of

transactions on their documents directly from any property dialog. They can also turn the history on or off without affecting the server side audit trail.

**Status:** The status field permits the implementation of simple workflow and contains choices such as draft and published - Administration configurable.

## **RECORDS MANAGEMENT**

The Document Management Extension System has many record management features which include the following:

### **Custom Records Management HTML Forms**

A DME Administrator (or user) can create HTML forms using a simple HTML editor (such as Microsoft Front Page Express) for use as a data entry form for Records Management purposes.

Organizational forms can be simply and efficiently designed and implemented as Standard Data Capture forms for Records management or any other data capture process.

## **Record Viewer Application**

The DME Record Viewer allows a user to retrieve/complete/view/save HTML Records Management Forms.

The ODMA compliant HTML forms viewer allows standard HTML forms to be treated just like any other managed object. Users can load a form, enter the required data and save the form (complete with data) as a new DME document.

Records Management is just one of the possible uses for the new Forms technology.

### **Permanent Records**

Users can flag a DME object (including the HTML Records Management Forms) as permanent. The effect of this is to freeze an object in a 'published' state.

When an object is flagged as permanent, it cannot be unflagged, modified or deleted. To records management, this is a preservation feature and to others this is a publication feature as the object is effectively frozen at that point of time.



**Records Manager User Class**

DME Administrators can specify a group of users who have modify rights in respect of all permanent objects.

Organizations can designate certain users as being part of the Record Manager Group. Those users have modify permission in relation to permanent objects. This permits the designation of specialist Records Managers.

It is envisaged that other embodiments of the invention will exhibit any number of and any combination of the features of the previously described two embodiments.

Whilst we have described herein one specific embodiment of the invention it is to be understood that variations and modifications in this can be made without departing from the spirit and scope thereof.

## We Claim:

1. A document management extension system for Microsoft Exchange wherein the system merges the functionality of index databases, file repositories and messaging systems using Exchange and leverages the tight integration of Exchange and an NT Server for security and redundancy management.
2. A document management extension system as claimed in Claim 1 wherein the system includes a user interface and this is accessed through dialogs in specific applications or through a find application.
3. A document management extension system as claimed in any previous claim wherein non-Microsoft Office and Office applications including Word, Powerpoint, Binder, Outlook, Eastman(Wang), Image Viewer and Windows Paintbrush are supported by the system.
4. A document management extension system as claimed in Claim 3 wherein when the system transacts with the Exchange

Server in a standard file open the processes which take place include:

- a document management extension service setting a flag in a document management extension object store by setting the Status Property to Open and by inserting the time and user's name in a Status information property;
- the document management extension service copying the object from the public document exchange store to the user's mailbox; and
- the document being copied from the user's mailbox and moved to a local temporary directory for editing by the document management extension user.

5. A document management extension system as claimed in Claim 4 wherein when a document is closed or saved the processes which occur include:

- moving the document from a local temporary file to the temporary file in an OST file if the server is offline or to a temporary folder in the user's mailbox if the server is online;
  - moving the documents from the user's mailbox to the document management extension store; and
  - for each document, resetting the Status property to available and the Status Information Property to null.
6. A document management extension system as claimed in any previous claim wherein when a network or server fail while a document is open, the user is able to continue working even if not aware that the network or server has failed.
7. A document management extension system as claimed in Claim 6 wherein as soon as the network is available, the user's offline file automatically re-synchronises with the user's mailbox on the server.
8. A document management extension system as claimed in Claim 7 wherein the system enables a user to check documents out

to their local machine using a check out command available in any dialog.

9. A document management extension system as claimed in Claim 8 wherein the system informs a user who attempts to open a document that has been checked out that the document has been checked out and when the document was checked out.
10. A document management extension system as claimed in Claim 9 wherein the system enables the user to select the check out function from the document management extension dialogs and the processes which occur include:
  - document management extension setting a flag in the object Store by setting the Status property to checked out and by inserting the time and user's name in Status information property; and
  - document management extension copying the object from the public document management extension store to the user selected location on a physical file system.

11. A document management extension system as claimed in Claim 10 wherein the system enables a user to check a document in if the user is connected to the network and the processes which occur include:

- the checked-out copy of the document being moved to the document management extension object store and a flag being reset in the document management extension object store, however if the object does not exist in the document management extension store, then it added to the store.

12. A document management extension system as claimed in any previous claim wherein the system is able to be utilised in a Windows 95 (Windows NT) shell application and subsequent revisions of the application, the application undergoing various processes including;

- addition of document management folders to Windows Explorer and Outlook;
- modification to a Start Menu;

- addition of a system tray to the application.
  - addition of further items to a context menu for some types of documents.
13. A document management extension system as claimed in Claim 12 wherein the modification to the Start Menu include:
- addition of a In Document Manager command using a shell extension; and
  - addition of a Open from Document Manger command to the Start Bar which launches a document management extension dialog.
14. A document management system as claimed in any previous claim wherein the In Document Manager command in the Start Menu launches an application or system for searching document management extension store.
15. A document management system as claimed in Claim 14 wherein the system allows for searching on all document management

extension properties and allows viewing of object properties and setting of permissions.

16. A document management extension system as claimed in Claim 15 wherein within document management extension dialogs a context menu has an open function which launches the appropriate application and opens a file.
17. A document management extension system as claimed in Claim 16 wherein within document management extension dialogs a context menu has a check out function which is disabled if a document is already checked out.
18. A document management extension system as claimed in Claim 16 wherein within document management extension dialogs a context menu has a check in function which is disabled if a document is already checked in.
19. A document management extension system as claimed in Claim 18 wherein within document management extension dialogs a context menu has a properties function which displays the properties screen and which permits the viewing and editing of a documents properties.



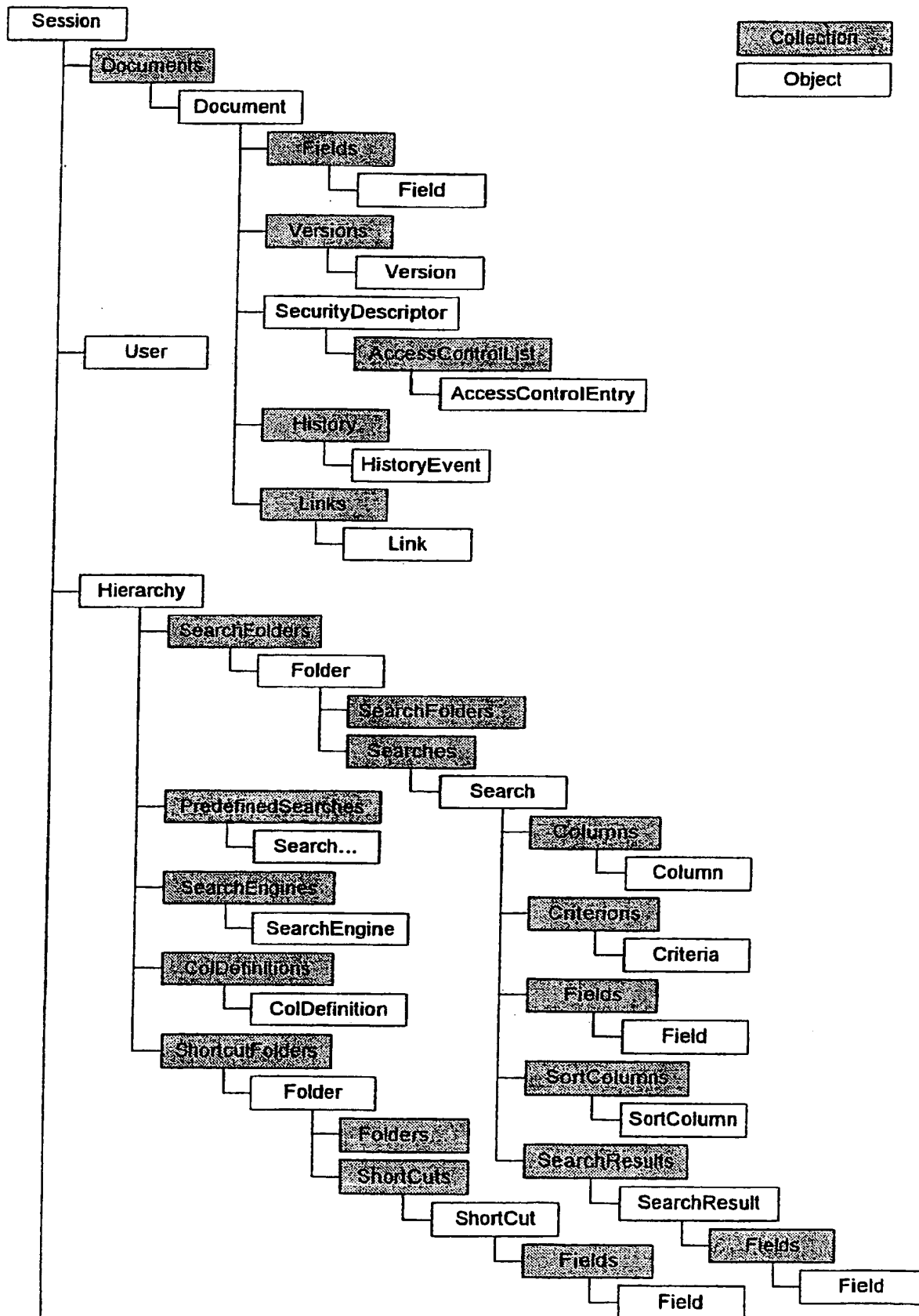
20. A document management extension system as claimed in Claim 19 wherein within document management extension dialogs a context menu has a Status function which allows the implementation of workflow and includes options of draft or published.
21. A document management extension system as claimed in Claim 20 wherein the system prevents uncontrolled and unauthorised access to its object store.
22. A document management extension system as claimed in Claim 21 wherein a user of the system can set any document level security attribute except delete using a document management exchange interface to the exchange security settings.
23. A document management extension system as claimed in Claim 22 wherein a user is able to alter a document and properties but is restricted from altering permissions or deleting permissions.

24. A document management extension system as claimed in Claim 23 wherein the system allows a user to conduct a search for a document and view the document but not open the site.
25. A document management extension system as claimed in Claim 24 wherein the system allows for a time-based archiving or deleting such that after a specified time a document can be archived or deleted and the system further allows for the archiving or deleting function to be overridden.
26. A document management extension system as claimed in Claim 25 wherein administrator options supported by the system include:
- creating and deleting types of documents;
  - setting archive properties and/or replication properties in relation to the types of documents;
  - permitting open access on all documents; and
  - searching across the whole of a document management extension organisation.

27. A document management extension system as claimed in Claim 26 wherein the system allows replication on a whole of document set basis or an individual document replication.
28. A document management extension system as claimed in Claim 27 wherein the system permits full text searching on all document management extension documents and the system utilises Fulcrum Knowledge Network and Fulcrum Exchange Connector to provide his functionality.
29. A document management extension system as claimed in Claim 28 wherein the system permits users to link documents to each other by specifying one or two way logical links between related documents.
30. A document management extension system as claimed in Claim 29 wherein the system enables a system administrator or user to create HTML forms using a HTML editor for use as a data entry form for record management purposes.
31. A document management extension system as claimed in Claim 30 wherein the HTML editor is Microsoft Front Page Express.

32. A document management extension system as claimed in claims 30 and 31 wherein the system includes a document exchange extension record viewer which allows a user to retrieve, or complete or view or save HTML records management forms.
33. A document management extension system as claimed in any previous claim wherein the system allows for a user to flag a document management extension object as permanent.
34. A document management extension system as claimed in Claim 33 wherein the system allows document management extension administrators to specify a group of users which can have modification rights in respect of all permanent objects.

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